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184" CYCLOTRON

Oscillator Capacitance Measurements

by

R. L. Anderson

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184" CYCLOTRON

Oscillator Capacitance Measurements

By R. L. Anderson

Experiment done by R. L. Anderson and J. Riedel

Introduction

Capacity of the oscillator plate to ground was requested by Mr. Pote, electrical engineer at Harvard University. It was also desirable to have this information for comparison with model measurements and for the records.

Experimental Setup:

The oscillator housing was separated from the transmission line housing, and the oscillator plate coupling loop was disconnected at its grounded end. The water lines running through the loop were disconnected at their entrance into the loop. The G-R impedance bridge leads were connected to the 9C21 tube water jacket and to the oscillator housing. For accuracy an oscilloscope was used in balancing the bridge. (Oscillator wiring diagram, Dwg. #2L2754)

Results:

The plate to ground capacity with coupling loop disconnected was $113 \mu\mu f$. The plate to ground capacity with coupling loop disconnected and two $50 \mu\mu f$ vacuum capacitors added as in normal run condition was $219 \mu\mu f$. The grid circuit contains $15 - 50 \mu\mu f$ vacuum capacitors in parallel (calculated) - $750 \mu\mu f$. The filament circuit contains $10 - 50 \mu\mu f$ vacuum capacitors in parallel (calculated) - $500 \mu\mu f$. It was not deemed necessary to measure the grid or filament circuits. The measurements were made with G-R Impedance Bridge, Type 650-A Serial #1977, and are $\pm 2 \mu\mu f$. Lead capacity of $29 \mu\mu f$ has already been deducted.

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